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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,751	10/29/2003	John Frederick Porter	11277-0039	7560

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EXAMINER	
MAKI, STEVEN D	

ART UNIT	PAPER NUMBER
1733	

DATE MAILED: 05/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/696,751	PORTER, JOHN FREDERICK	
	Examiner	Art Unit	
	Steven D. Maki	1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 February 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *9-11 and 13-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9-11 and 13-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1) A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2-16-06 has been entered.

2) The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3) Claims 9-11 and 13-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 9 describes "to enhance adhesion of an alkali cementitious matrix", but fails to describe between what and what adhesion is enhanced. Furthermore, the description of applying wetting agent on mesh fibers and second layer to enhance adhesion of alkali cementitious matrix is confusing. Does claim 9 require enhanced adhesion between the matrix and the layers? In claim 9, it is suggested to change "to enhance adhesion of an alkali cementitious matrix" to --to enhance adhesion of the first and second layers to an alkali cementitious matrix--.

In claim 9, the scope and meaning of "said hydrophilic binder ... reduces the need for said wetting agent on said second layer" is unclear. One of ordinary skill in the art is not reasonably appraised of the scope of protection afforded by this language.

For example, the meets and bounds of "the need" is unclear. What determines and/or defines "the need"?

In claim 15 line 4, "wetting" should be --imbedding-- since "wetting" was changed to --imbedding-- in claim 9 in the amendment filed 2-16-06.

4) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5) Claims 9-11 and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Canada (CA 2006149) in view of Riley et al (US 3903879), Newman et al (US 6054205), Great Britain (GB 2023687) and Shah et al (US 5891374).

Canada discloses a process of manufacturing a cement panel comprising:

arranging a **surface reinforcing layer (14)** on a surface of a forming apparatus / mold 20;

spraying an inner surface 24 of the reinforcing layer 14 with a suitable polymer (e.g. acrylic resin);

casting **cementitious material (32)** on the coated reinforcing layer 14 and vibrating the apparatus to facilitate *penetration* of the cementitious material into the coated reinforcing layer 14;

spraying a **surface reinforcing layer (16, 36)** with a suitable polymer (e.g. acrylic resin);

placing the coated reinforcing layer 36 over the cementitious material 32 and pushing the coated reinforcing layer 36 into the cementitious material 32 to facilitate *penetration* of the composition into the coated reinforcing layer 36; and curing the cement panel wherein the manufactured cement panel comprises a surface reinforcing layer on each side of a cementitious core 12.

Canada teaches that the surface reinforcing layer may be a porous fabric or paper. Canada teaches that the fabric should be composed of an alkaline resistant material (e.g. alkali resistant polymer fibers or glass fibers coated with a polymer) so it will not be damaged and eventually destroyed by the alkaline in the cementitious composition. Canada teaches that the fabric may be a random fiber fabric ("nonwoven fabric"). As an example of a fabric, Canada discloses suggests using a mat ("nonwoven fabric") of glass fibers coated with polymer during the manufacture of the mat.

With respect to spraying the suitable polymer such as acrylic resin, Canada teaches "This polymer coating, which preferably is in addition to to a polymer coating applied to the glass fiber during the manufacture of the mat, provides additional protection for the fibers of the reinforcing layer and results in a stronger bond between the central core 12 and fabric layer. One reason for the stronger bond is that the liquid polymer coating will decrease the viscosity of the cementitious composition when it is poured into the form and this in turn permits the composition to penetrate the fabric or paper layers." (pages 13-14). The sprayed polymer (e.g. sprayed acrylic resin) functions, therefore, as a wetting agent and enhances adhesion of fabric to an alkali cementitious matrix.

In figures 3-8, Canada shows a process of making a cement panel comprising a single fabric layer 14 and a single fabric layer 16. Canada additionally teaches "... instead of a single layer of surface-reinforcing fabric or paper on each major surface of the product, several layers of such material placed one over another can be used with the layers being adhered together by the cementitious composition and/or polymer coatings" (page 18). Canada is silent as to the polymer coated glass fibers being thermoplastic coated glass fibers.

As to claim 9, it would have been obvious to manufacture Canada's fabric such that the fabric has "... randomly oriented fibers joined by a hydrophilic chemical binder, which randomly oriented fibers comprise, a thermoplastic material having a composition that is both, water resistant and alkali resistant" since (1) Canada, directed to making a cementitious panel, suggests manufacturing a mat ("nonwoven fabric") of randomly oriented fibers such as glass fibers coated with alkali resistant polymer and (2) Riley et al, directed to fiber reinforced cementitious composites such as boards, suggests (a) coating glass fibers with thermoplastic when making a fiber reinforced cement composite to avoid uncoated glass fibers from being attacked by alkalis present in the cement and (b) mixing chopped glass fibers and absorbent fibers with a suitable adhesive such as polyvinyl alcohol and laying the mixture as a felt ("nonwoven fabric"). The self evident benefit of using adhesive to bond fibers of a felt includes improvement of the integrity of the felt / holding of the fibers within the felt. The claimed hydrophilic chemical binder reads on the polyvinyl alcohol adhesive disclosed by Riley. Polyvinyl alcohol is a hydrophilic material as evidenced by Shah et al (e.g. col. 3 lines 4-5). In

other words, Shah et al evidences that the polyvinyl alcohol adhesive disclosed by Riley is hydrophilic. Hence, Canada teaches using a mat ("nonwoven fabric") including randomly oriented fibers comprising alkali resistant polymer and Riley et al suggests using thermoplastic as an alkali resistant polymer for fibers. Riley additionally suggests bonding Canada's fibers together with polyvinyl alcohol (hydrophilic chemical binder); it being emphasized that that both Riley and Canada teach using alkali resistant polymer coated glass fibers for reinforcement of a cement product.

Furthermore, it would have been obvious to one of ordinary skill in the art to form a "mesh ... layer from mesh fibers, which mesh fibers comprise a thermoplastic material having a composition that is both, water resistant and alkali resistant, and which mesh fibers further comprise glass core stand material protectively coated with the thermoplastic material prior to forming the mesh first layer" and unite this mesh layer to the random fiber fabric ("nonwoven fabric") having fibers bonded with polyvinyl alcohol since (1) Canada suggests using fabric layers for the surface reinforcing layer as an alternative to using a single fabric for the surface reinforcing layer, (2) Riley et al teaches that reinforcement for cement products also include meshes wherein thermoplastic coated glass fibers are pretwisted with absorbent fibers and then woven to form a mesh and (3) Newman et al and Great Britain suggest using "nonwoven fabric united to a mesh fabric" for each side of a cementitious board so that the cementitious board has strength and smooth surfaces. In Newman et al, the "nonwoven fabric" is a melt blown web comprising randomly oriented thermoplastic fibers and is adhered to (united with) "mesh fabric", which is an open mesh glass scrim comprising thermoplastic

coated glass yarns. In Great Britain, the "nonwoven fabric" is a nonwoven material comprising glass fibers and the "mesh fabric" is a layer of glass fiber fabric having a glass filament mesh. The glass fiber fabric and the nonwoven material are "united" since Great Britain teaches that they constitute a unitary sheet. Hence, Newman and Great Britain motivate one of ordinary skill in the art to use a mesh fabric united to a nonwoven fabric in Canada's process so that the manufactured cement panel has improved strength and smooth surfaces. With respect to "protectively coated with the thermoplastic material prior to forming the mesh first layer", Riley teaches weaving to form a mesh after coating glass fibers with thermoplastic material.

With respect to "applying a wetting agent on the ... mesh fibers and on the second layer", it would have been obvious to one of ordinary skill in the art to apply Canada's suitable polymer such as acrylic resin to the mesh fabric and the random fiber fabric (nonwoven fabric) since (1) Canada suggests spraying suitable polymer such as acrylic resin to facilitate penetration of cementitious material (i.e. cement) into fabrics and (2) Great Britain suggests spraying wetting agent on fabrics (mesh fabric and nonwoven fabric) to obtain a complete and intimate contact with cementitious material (i.e. gypsum) and the fibers of the fabrics. Great Britain is in the same field of endeavor as Canada and is directed to the same problem of Canada. Both Great Britain and Canada teach application of an agent to facilitate penetration of cementitious material into a fabric. It is acknowledged that the cementitious material in Canada is cement and that the cementitious material in Great Britain is plaster (gypsum). One of ordinary skill in the art recognizes that either cement or gypsum may be reinforced with glass fibers

and that when cement is reinforced with glass fibers, the glass fibers should be coated with thermoplastic (alkali resistant material). See Riley and Newman et al. Great Britain's teaching to apply wetting agent to mesh and nonwoven are applicable to Canada since one of ordinary skill in the art is instructed by Riley and Newman et al to use the *same reinforcement* for either a cement based product or a gypsum based product with the understanding that glass fibers should be coated with an alkali resistant material (thermoplastic) when using alkali cementitious material such as cement.

With respect to "applying a wetting agent ... to enhance adhesion of an alkali cementitious matrix, wherein said hydrophilic binder on said randomly oriented fibers reduces the need for said wetting agent on said second layer", Canada 149 suggests applying acrylic resin ("wetting agent") and Riley suggests using a polyvinyl alcohol adhesive ("hydrophilic chemical binder"). In particular, Canada teaches applying acrylic resin ("wetting agent") to permit the cementitious material to penetrate the fabric and form a stronger bond between the cement core and the fabric. Riley teaches using polyvinyl alcohol ("hydrophilic chemical binder") as an adhesive to bond fibers of a felt ("nonwoven fabric").

With respect to imbedding and hardening, Canada teaches penetrating at least half of the fabric with cement material and curing the cement material.

As to claims 10, 11, 13 and 14, it would have been obvious to one of ordinary skill in the art to apply the wetting agent on the mesh fibers, prior to the step of uniting the mesh first layer and the second layer; apply the wetting agent on the randomly oriented fibers, prior to the step of uniting the mesh first layer with the second layer

having the randomly oriented fibers; unite the mesh first layer with the second layer, prior to applying the wetting agent on the mesh fibers and the randomly oriented fibers; or simultaneously apply the wetting agent on the mesh first layer, and on the second layer in Canada's process of manufacturing a cement panel in view of (1) Newman et al and Great Britain's above noted teaching to unite a mesh fabric to a nonwoven fabric, (2) Canada's teaching to use the suitable polymer (acrylic resin) to facilitate penetration of cementitious material into fabrics and (3) Great Britain's suggestion to spray wetting agent on mesh fabric and nonwoven fabric to obtain a complete and intimate contact with cementitious material and the fibers of the fabrics. At page 2 lines 41-59 and page 3 lines 6-22, Great Britain discloses applying a wetting agent. Great Britain specifically teaches applying the wetting agent to the glass fiber fabric *and* the nonwoven. Great Britain also teaches applying the wetting agent as a *pretreatment* or applying the wetting agent *immediately before* applying the glass fiber combination to the core.

As to claims 14-16, it would have been obvious to one of ordinary skill in the art to convey the united mesh first fabric and second layer in a continuous production apparatus, while applying the wetting agent on the mesh fibers, and while applying the wetting agent on the randomly oriented fibers, and while wetting [imbedding] the mesh fibers and the randomly oriented fibers with the alkali cementitious matrix, and while hardening the alkali cementitious matrix in view of (1) Canada's teaching to manufacture (albeit by a batch process) a cement board having surface reinforcing layers and (2) Newman et al's suggestion to use a continuous production apparatus for making a cement board having surface reinforcing layers during which a composite fabric is

simultaneously applied to the upper and lower side of the cementitious core. As to claims 14 and 16, Great Britain teaches applying the wetting agent *immediately before* applying the glass fiber combination to the cementitious core and Newman et al teaches simultaneously applying a composite fabric to a cementitious core.

Remarks

6) Applicant's arguments with respect to claims 9-11 and 13-16 have been considered but are moot in view of the new ground(s) of rejection.

7) No claim is allowed.

8) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven D. Maki whose telephone number is (571) 272-1221. The examiner can normally be reached on Mon. - Fri. 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Steven D. Maki
April 28, 2006

STEVEN D. MAKI
PRIMARY EXAMINER
4-28-06